

## Thermal Analysis Software

Depending on their orientation to the Sun, payloads in orbit are subjected to heat and cold over a range of several hundred degrees. To assure that spacecraft perform properly over the entire temperature range, extensive thermal analyses are conducted during the payload design phase.

To meet a need for an easier-to-use and less costly way of doing thermal analyses, Goddard Space Flight Center contracted with Arthur D. Little, Inc. for development of a software package that simplified the complex procedures involved. The resulting product was the Simplified Space Payload Thermal Analyzer, or SSPTA, essentially an integration of several computer programs used independently in thermal analysis of spacecraft. Goddard successfully used SSPTA for years on a VAX computer and the software has proved an effective thermal analysis tool for many other government and industry users.

A former Goddard engineer has taken the simplification process a step further. Nicholas M. Teti, an engineer who worked in Goddard's Thermal Engineering Branch (1985-89) and is

now with Swales and Associates, a Beltsville, Maryland engineering consulting firm, developed a new version of SSPTA that can be used on a 386 personal computer. Thus a small business can use the modeling software at a fraction of the investment a VAX computer would entail. At lower left, Teti is pictured with his software installed on a 386 PC.

SSPTA/386, as Teti calls his software package, includes the programs that Goddard has traditionally used in thermal design and analysis. The original programs were modified to run on the 386 system and automatic data transfer between programs was improved. SSPTA/386 includes all the features available in Goddard's VAX version of SSPTA. SSPTA/386 is designed to meet the needs of experienced thermal engineers, who may or may not have computer experience, as well as the needs of junior engineers and computer specialists who have little thermal analysis experience.

Teti's software package is highly flexible in that it allows the user to run the programs interactively or in batch mode. It provides a menu system that allows the user to select a program or a combination of programs. Below, are two of Teti's associates, S. Bruffey, at left, and Edward J.M. Colbert, who worked to make the menu system and database manager more user friendly. Teti originally developed SSPTA/386 solely for his own use, but it has met with such interest he is now offering the package commercially.

